

# Macroeconomic Analysis I

Fall, 2025

Instructor: Ching-Yi Lin  
Class Meeting: M567  
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The objective of this course is to familiarize graduate students with quantitative methods in advanced macroeconomics and introduce some fundamental workhorse models and methods of formal macroeconomics analysis. The main difference between undergraduate and graduate macroeconomics is the use of models that are explicitly dynamic and stochastic. Dynamic general equilibrium (DGE) macroeconomics by providing microeconomic foundation for macroeconomics has emerged in recent years and been adopted by most modern research in macroeconomics as a leading approach.

Course material will be drawn from several sources. Suggested text is “Advanced Macroeconomics, David Romer” and “Barro and Sala-i-Martin, Economic Growth, Appendix”.

## **Evaluation:**

Homework and quizzes: 20%  
Midterms: 40%  
Final: 40%

## **Course Outline:**

1. Differential Equations
2. Useful Results in Calculus
3. Useful Results in Matrix Algebra
4. Static Optimization
5. Dynamic Optimization in Continuous-Time Economic Models
6. Dynamic Programming
7. The Solow Growth model (Romer ch1)
8. Infinite-Horizon and Overlapping-Generations Models (Romer ch2)
9. Real Business Cycle Model